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ADOLESCENT STUDENTS' ATTITUDES TOWARD WORK

by

© PETER WOLOSHYN

A THESIS

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ABSTRACT

This study was conducted to investigate the applicability of the sort technique as a means of assessing changes in attitudes toward work held by public school students in Edmonton, Alberta, Canada. Five groups of male subjects, enrolled in grades eight, nine, ten, eleven, and twelve, were included in the study.

A set of sort cards, containing 60 statements about the meaning of work as developed by Neff, was used in this study. Every subject belonging to the five groups was requested to sort the 60 items over nine steps (1 to 9), with step one being "most characteristic" of the way he felt about work and step nine being "least characteristic" of the way he felt about work. The purpose of the study was to isolate factors related to the meaning of work held by students and secondly to use the instrument to detect changes in attitude toward work between grade levels. The results of the individual sorts were correlated with each other and then subjected to factoral analysis.

Hypothesis

Before the hypothesis could be tested it had to be determined whether the sample group factors were congruent with the theoretical model. After determining congruency of the Neff model the hypothesis which was tested stated

that:

> Differences between group factors will not be significantly different from zero. (.05 level of confidence)

Sample and Population

Data were collected at a junior and senior high school in Edmonton, Alberta, Canada. A total of 451 male subjects were included in the sample which was subdivided into five groups according to grade level.

Conclusions

The findings of the factor analysis performed on the total data indicated the discriminating power of the instrument. The results indicated a perfect discrimination on the satisfaction-dissatisfaction continuum. Discrimination of the need continuum proved adequate. The self-other continuum, tended to be less defined.

The Hypothesis was subdivided into ten sub-hypotheses for the purpose of statistical testing. Three of the sub-hypotheses were rejected and the remaining seven sub-hypotheses were not rejected. Of the three sub-hypotheses which showed significant differences between groups, the first two factors were concerned with creativity and activity concepts. The third factor was not interpretable.

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CHAPTER I

THE PROBLEM

I. INTRODUCTION

Contemporary North American Youth frequently is sheltered from direct confrontation with work. Nonetheless, he acquires from the culture, at an early age, sets of attitudes and biases about work. According to Remmers and Bournfeind (1951) many children express concern about work as early as the fourth grade. O'Hara and Tiedeman (1959) indicated that grade nine students were able to "distinguish the area of work values." Borow (1962) suggested that many attitudes which begin to form early in life, serve to establish in the child's behaviour perceptual defenses against various categories of occupations. Kaye (1960) and Arnstein (1964) indicated the desirability of improving attitudes concerning future work goals. During the course of classroom interaction, Tennyson (1967, p. 28) suggested that the teacher and the student must

> . . . learn to observe subtle psycho-social aspects of the work situation and the person performing in the occupation--the role expectation and the role relationships, the value commitments of those engaged in the occupations, and the status arrangements within the work milieu.

There has been very little direct investigation of what work means to the individual who is to perform it. "Human beings learn to become workers." (Neff, 1963, p. 139.) The details of this learning process vary from individual to individual. Occupational maturity is a long-continuing process of development as Crites (1969, p. 14) affirms:

> All the major theories in the field today have as one of their basic propositions, ... that vocational behavior of the individual develops as he grows older.

II. STATEMENT OF THE PROBLEM

Ideas, facts, theories, and fantasies that contribute to the development of meanings and knowledge of concepts related to work, come to the child from four major social forces: (1) his peers, (2) his family, (3) his school, (4) his exposure to mass media. Once stabilized these concepts are modified, if at all, by being tested against the reality of adult roles.

There is, however, little empirical evidence of what attitudes youth in school hold toward work. Further, it is not known how these attitudes differ by age or grade in public school groups.

III. PURPOSE OF THE STUDY

This study was designed to measure attitudes of students enrolled in grades eight to twelve toward work. It was

conducted to isolate specific factors related to the meaning of work held by public school students attending junior and senior high schools in Edmonton, Alberta, Canada. Further, by analyzing factors across grade levels, a trend or changes in attitudes toward work might be noted.

IV. NEED FOR THE STUDY

Machines are taking the jobs of men, thus many jobs during the last decade have been lost to automation. There seems to be little doubt that automation, in the coming years, will have an increasing impact upon the worker. Also, many writers express alarm that a rapidly advancing technology is rendering many kinds of work so routinized and mechanical that there is an acute danger that work is becoming meaningless to those who perform it.

Schill (1963, p. 75) has indicated that many individuals attach unrealistic meanings to concepts related to work and leisure for the age in which they live.

> Many of the attitudes toward work which appear to be dictated by labor force trends are in sharp contrast to our Puritan values. In the past, our Puritan values dictated that we respect hard work and not pleasure seeking. Work is still an acceptable activity, even though it requires a new definition with advanced machines and sources of power doing most of what used to be called work, but pleasure is no longer degraded and frivolity with its aspects of conspicuous consumption may even be acceptable. There is at the minimum, a need for a new interpretation of what is acceptable human activity.

A great many formal and informal social arrangements have been developed which have the objective of transforming

the nonworking child into the working adult. From comparatively early childhood, the individual is increasingly showered with messages designed to convince him that work is not only a necessary means to certain universally designed ends--maturity, independence, marriage, respect, etc.--but also something good in itself. The school instills in its captive audience an entire network of values, habits, and attitudes which play a very important function in preparing children for later roles as adult workers. Modern society also has at its command an enormous folklore bearing on the virtues and rewards of work. To the degree that children incorporate and internalize all these precepts, they become more or less willing workers.

In our complex society the school, more than any other institution, has the capability to perpetuate and renew our society to meet the problems of each new age. During a period of rapid social change, if opportunities for employment and the nature of that employment change, an adult operating upon a concept of employment learned as a child will find his role behaviour in the new situation inappropriate.

The attitudes of the child toward such concepts as work in a rapidly changing technological society affect his role expectation as an adult. This is especially true when the attitudes developed in a child toward these concepts are not commensurate with societal change.

Five years from now those students currently enrolled in the eighth grade will be potential members of the labour force. The meanings attached to concepts of work by students currently enrolled in public schools will have a profound effect upon the success of the vocational education endeavor.

V. DEFINITION OF TERMS

A major issue faced by a developmental psychology of work, as in the psychology of adult work, was the question of how "work" was to be defined. A wide range of possible definitions were available. Some researchers defined work as a dominating purpose in life; a need for security, achievement, and "includes everything that serves the end of self-preservation." (Lantos, 1943, p. 118.)

The difficulty with all such definitions, from the operational point of view, was that they gave no criteria for distinguishing between working and non-working behaviour. Without such criteria the labeling of certain needs, attitudes, and purposes as working was purely arbitrary.

Similarly, a precise definition of attitude is equally difficult to construct because attitudes overlap with other kinds of psychological preparation for response.

For the purposes of this study work and attitude were defined as follows:

Work - Refers to activity calling for the expenditure of effort toward some definite achievement or outcome. Rewarded

or not, easy or hard, it is always effort toward a specified end.

Attitude - An attitude may represent both an orientation toward or away from some concept or situation, and a readiness to respond in a predetermined manner to these or related concepts or situations.

VI. STATEMENT OF HYPOTHESES

Five groups of students, who at the time of the study, were attending the Edmonton Public School system in grades eight, nine, ten, eleven, and twelve were given the 60 item card sort on concepts of work. The set of cards which was developed by Neff contained statements representative of work. The subjects sorted the 60 cards over nine steps from most characteristic to least characteristic of the way they felt about work.

The Hypothesis stated that: differences between the group factors will not be significantly different from zero (.05 level of confidence).

VII. ASSUMPTIONS

(1) It was assumed that the two schools chosen, Hardisty Junior High and Harry Ainlay Composite High School, represented a fair approximation of the normal school population.

(2) It was further assumed that in investigating a cross-section of students, that is from Grades VIII to XII over a

period of approximately one year, any difference found would be the result of environmental and maturational factors that took place as the students progressed through the school system.

VIII. LIMITATIONS

The application of the Q-sort instrument in this study had limitations in that no attempt was made to control variables such as level of achievement, I.Q. level, geographic location or socio-economical background because of practical considerations. Further, because Group I and Group II data had previously been collected, it was accepted and employed with the knowledge that the time of collection of Group I and Group II data and the collection of the remainder of the group data were separated by approximately ten months. Mechanical errors in reading and sorting and the actual time spent on the sorting procedure were other variables which could not be controlled.

IX. METHOD OF THE STUDY

A measuring scale has been developed by Neff (1963) to study intra-individual changes in the meaning of work. This instrument was used to provide a measure for comparing five groups of public school grade students, one group each of grades eight, nine, ten, eleven and twelve. Using a list of

Q-sort items relating to statements about work, the difference in the meanings these groups attached to the concepts of work was measured. The measurement of these differences reflected their relative importance to each other.

The Q-sort items ranged from direct statements of concrete situations to statements concerning abstract qualities. Each of the sixty items appeared on a randomly numbered card two inches by four inches, a size that permitted easy sorting.

The material given to the students consisted of an information sheet, a set of sort cards, an instruction sheet for the sorting procedure, and a record sheet on which to indicate the number which was assigned to each card. All responses within groups were anonymous. Every subject in the study was required to sort the set of 60 items over nine steps (from one to nine).

CHAPTER II

RELATED READING

I. INTRODUCTION

A human being is not born with the ability to work. The adult ability of work appears to be a long series of individual experiences, events and circumstances, which occur within an environment of social demands, expectations and mores. (Neff, 1968, p. 3).

Many educationalists contend that the behavioural work modes appear to develop as: constraints from socio-economic status, the particular aspirations and biases, barriers posed by ethnic factors, differences in relative ease of entry into different occupations, the various influencing factors which characterize the system of formal education, the influences of peers and adults, and all may serve to determine choice of occupation.

A considerable amount of research has inquired as to how this behavioural process takes place in the life of the individual person and most researchers contend that in modern society the key influencing factor may be the school and the critical years from approximately grades four or five. (Tyler, 1955; Thompson, 1971).

Personality theorists appeared, in the past, generally concerned with the emotional side of human behaviour, rather than its cognitive or motor aspects. The primary domain of interests have had to do with the inter-personal relationships, including whatever the individual feels and believes is true about himself as a function of his relationship with others. Personality theories of vocational development may, in general, be classified as: "the psychoanalytically derived," the "self-concept theory," the "theory of interpersonal relations and need satisfaction," and the "cultural-dynamic approach." (Neff, 1968, p. 151).

II. PSYCHOANALYTIC THEORIES OF WORK DEVELOPMENT

For the classical Freudian, adult emotional responses to others were directed functions of very early interactions between the child and his parents. The general tendency of psychoanalytic theory was to place heavy emphasis on the development of the first few years of life--the period in which the child worked out his basic relationships with his parents. This theory assumed that the primary components of the personalities were laid down by the time the child was five or six years of age and that these components then functioned as unconscious determinants of adult interaction. (Freud, 1953).

While the classical Freudian school propounded that an individual's attitude toward work was substantially

determined during childhood crises of "psychosexual" development, neo-Freudians thought that this theory tended, if anything, to be too general in its application. It suggested that while childhood stages were necessary, they were not sufficient to account for adaptation to the demands of work. Further, the affective stages of later childhood and adolescence were an essential part of development. (Erikson, 1963).

Erikson's (1963) theory of "ego growth," unlike Freud's theory which contended that personality development was completed by the age of six, discerned later important stages in what Freud called the "latency period." Erikson suggested that prior to the onset of puberty, there was a period which he termed the "industry stage." It was during this stage that Erikson considered that the child's attitudes toward work and achievement started to develop.

The major premise made by Erikson was that the older child was confronted by a new set of life demands differing greatly in quality from those confronting him in his early years. The prelatency child had to incorporate many instrumental activities. He learned to feed himself, to put on his clothing, and even to help in the management of the household. But it was during what Freud called the latency period that quite new tasks appeared. He had to begin to work out his relationships to nonfamiliar figures and accept the authority of strangers. He had to reduce his dependency

on loved ones and begin to deal with the impersonal. He began the long progression as demanded by his society--the development from the dependent playing child to the independent working adult. (Erikson, 1963, pp. 48-108). Thus it could well be possible that certain important factors that influence the adult adjustment to work originated in times later than the latency or pre-adolescent settings.

Hendrick (1943) believed that, in addition to the primary pleasures achieved through gratification of the sexual and aggressive instincts and the derivatives and transformations of those instincts which reality imposed during child development, there was a third source of primary pleasure: ". . . that . . . sought by efficient use of the central nervous system for the performance of well-integrated ego functions which enable the individual to control or alter his environment." (Hendrick, 1943, p. 315). He called these functions the executant functions.

Hendrick put forward the thesis that there was a "work principle" governing the operation of the executant functions. Following Freud's theory that the source of all mental energy lies in the instincts, Hendrick (1943, p. 562) suggested a "mastery instinct" as the source of energy of the executant functions. The pleasure in work then, was a consequence of gratification of the instinct to master the environment.

On the other hand, Lantos (1943, 1952) felt that play and work become distinguished not by their content, but by their purpose. The transition from pleasure in activity to pleasure in achievement took place in the latency period as suggested by Erikson. Work was a dynamically important activity for human beings but she felt that Hendrick went too far in assuming "work instinct." Like Freud, Lantos thought that men do not work spontaneously. Two different forces impelled men to work. One was an outer force--necessity, the origin of Freud's reality principle. The second force was internalized aggression, the source of which was the superego.

III. PSYCHOLOGICAL THEORIES OF WORK DEVELOPMENT

A great deal of literature on the psychology of work has tended to be rather specialized. In the main, the psychological studies of human work have tended to assume that human beings can work and these studies have directed their attention to the detection, measurement, and description of individual differences in occupational behaviour.

Super's (1957) general approach to vocational development was marked by a heavy commitment to voluntarism and rationalism. He believed that a person would make occupational choices which were consistent with his self-image. The core determinant of the career pattern, therefore, was

the self concept which was something that developed in the individual over time, that passed through many stages of formation, differentiation, and articulation, and was ultimately translated in occupational terms. (Super, 1957, pp. 80-100). Super's basic research strategy was to try to find means of assessing the components of the self-concept in different individuals at different points in time and then to attempt to examine the relationship between these components and the career patterns which ultimately made their appearance.

Super's research revealed a number of things about the process through which the non-working child was gradually transformed into a working adult. His results indicated that before the eighth or ninth grade the school child was hardly aware of occupational matters and that the high school years appeared to be marked by a very considerable floundering. (Super, 1962). The crucial events that caused a person to move in one or another occupational direction appeared to take place during the high school years. To date, his major contribution appeared to be his insistence that vocational behaviour would be understood only when the secrets of individual development were revealed.

Ginzberg (1951) interviewed 91 subjects between the ages of 11 and 24 years. His first conclusion was that occupational choice was not an event but a process which took place over a period of some eight to ten years. He was able

to discern three periods of development which he labeled: fantasy (10-12), tentative (12-17), and realistic (17---)." (Ginzberg, 1951, p. 60). Secondly, he concluded that this process was largely irreversible, i.e. earlier decisions tended to reduce the degree of freedom available for later decisions that follow. Thirdly, he indicated that compromise was an essential feature of every choice.

In summary, Ginzberg suggested that the child was not much of a vocational animal until approximately twelve years of age. Prior to this age, the only meaning that work had was that it was something grown-ups did and, that work was desired only to the extent that one wished to become part of the adult world. The ideas held by younger children about work were exclusively in the realm of fantasy and had little or no relation either to the abilities or to the interests of the children. The child wanted simply to be like his adult heroes of the moment.

While Ginzberg's original works indicated that final occupational choice was a process which began early in life, his later work appeared to offer some contradiction to his earlier theories that children pass through distinct stages of development. His latest work (Ginzberg, 1971) appeared to suggest that childhood experiences have little effect on career development.

Michael A. Ciavarella, writing in the February, 1973, issue of the Phi Delta Kappan, questioned Ginzberg's latest

work by suggesting Ginzberg was incorrect in assuming the process did not begin until age 14, or when the student reached the ninth grade because obviously children developed a number of motivational traits and response styles in the elementary school which had meaning for later career decisions. (Ciavarella, 1973).

In much the same vein, Rupert N. Evans (1972) indicated that evidence was strong that attitudes are formed most efficiently early in life. Further, if society desires that the work ethic be inculcated in youth, it could best be accomplished in the lower elementary school grade levels.

On the contrary, Roe (1956, 1964) appeared to refute Ginzberg's theory that nothing happened to the student until approximately the age of twelve. She suggested that events experienced in early childhood could show an important relationship to later occupational identity. Her thesis conceptualized an occupational identity formed through the influence of a given set of early parent-child relationships. Roe, however, expressed firm reservations about the existence of such relationships in her later research writings.

IV. CULTURAL-DYNAMIC THEORIES OF WORK DEVELOPMENT

The literature has indicated that it has been customary for psychologists to allocate sensory perception and other cognitive processes, such as learning and thinking, to different categories and to discuss them more or less in

isolation. Comparatively little experimental study has been devoted to the development of perception and understanding of the environment. Extensive studies have been made of reflexive and conditional responses to isolated sensory stimuli; but to adapt appropriately to the environment, the child requires much more than the capacity to perceive and to react to relatively isolated and abstract stimuli. (Huhlen, 1970, pp. 70-73). According to Huhlen (1970) the child must acquire some understanding of the nature of objects in the environment--recognizing and identifying them from their appearance and behaviour--knowing what he can do with them. Such an understanding implies a considerable amount of knowledge which must be acquired by experience.

Tiedeman (1963), like Super, was interested in the development of the vocational self-concept. He has shown, however, that he is more open to consideration of the effects of environment. Several of his studies have led to the inference that sex role and family status are at least as important as the self-concept in influencing choice of vocation. Tiedeman (Tiedeman and O'Hara, 1959) provided empirical confirmation for Ginzberg's observation that the self-concept in boys begins to take shape as they pass through school grades nine to twelve and that a work-values stage (beginning around grade twelve) is preceded by an interests-stage (grade ten).

Nelson found that as children progress through the elementary school they tend to assimilate negative attitudes toward many occupations, thus restricting prematurely a range of occupations which they might later consider as possible careers. (Nelson, 1963).

Gunn has shown that fourth graders can rank occupations meaningfully, and that by the time they are in the seventh grade they begin to rank jobs on the basis of status. (Gunn, 1964).

Rosenberg (1957, p. 4) has suggested that:

> It is possible to visualize the occupational decision process as a series of progressive delimitations of alternatives. A number of factors in the individual and in the society operate to cut down the broad range of occupational possibilities available. Some occupations are not socially appropriate, some are not possible, and some are not desirable.

It appeared, therefore, that probably one of the earliest operating dynamic factors which served to narrow the field of possible occupational choice was the definition of roles by the culture and sub-cultures in which the child lives.

Tyler (1951, 55, 59, 61) has written a number of papers, and has executed several empirical studies, notably on the importance of sex role differentiation and preferences in the elementary grades. She isolated four role factors for boys:

1. an antiwork (or anti-adult) factor,
2. rejection of an inappropriate activity,
3. an anti-sissy factor, and
4. a pseudovocational factor.

The factors found by Tyler for boys hint of the beginnings of dlineation of the work role. She felt that somehow work activities become differentiated in experiences.

Although there were contradictions among the various authors regarding the time work concepts in children appeared, most writers agreed that work is not a natural activity. Human beings must learn to become workers and many attitudes toward work formed during early school years become well established by the eighth grade.

V. A THEORETICAL MODEL

Neff suggested that an examination of the problems of human work might be made from the understanding of human behaviour which has come to be known as the "transactional approach." "From this standpoint, adult work behaviour may be conceived as the complex product of a long series of learned and habitual styles of perceiving and coping with the demands of environment." (Neff, 196-, p. 72.) If this transactional viewpoint is to influence our conceptualizing of human work, we, as Neff suggested, must accept certain assumptions.

First, work development must be assumed to be a complex set of transactions manifested by persons when they are imbedded in or confronted with certain characteristic environments. Second, it must be assumed that these transactions are adaptive behaviour and they reflect the ways in which each person has learned to cope with certain

environmental demands and pressures since childhood. Third, it must be assumed that we are able to account for most of what is significant about human work behaviour without evoking primary drives or instincts as explanatory variables.

Neff's methodological approach centered on what work meant to the individual who was to perform it. He hypothesized that there might exist in some individuals an attitudinal structure--a set of opinions, beliefs, fears, expectancies and self-perceptions--which constitutes a psychological barrier against adequately performing the role of a worker.

In order to provide a reasonable account of the psychodynamics of work, Neff formulated a model based on his assumptions about work. In describing his model Neff (1963, p. 140) reported that:

> An effort was made to develop an instrument which will permit the investigator to discover what meanings work has for the individual as well as permitting study changes in these meanings as a foundation of a variety of conditions.

He devised this theory of the meaning of work from statements about work made by various authors and from his own experience with the work problems of handicapped persons.

He theorized:

> In a heavily work-oriented society . . . work is very closely bound up with the manner in which people identify themselves . . . the degree to which work is a component of self-esteem, both in the sense of the evaluation which a person places upon himself and the degree to which he can gain the respect of others. . . . One of the powerful cultural

> norms in our society is that people are expected to play some kind of productive role, an expectancy which is deeply inculcated in most of us through a long process of education, training, and general cultural pressure . . . for some people at least, the work they do is an important means of demonstrating their competency and thus tends to fulfill whatever needs they have for creativity.

Therefore, Neff's theory assumed that the meaning of work could be viewed as containing three variables.

(1) On a satisfaction to dissatisfaction continuum.
(2) That work is meaningful in terms of its relation to a variety of interrelated needs and,
(3) That these meanings were focussed on a self-others continuum. (Neff, 1963, p. 140.)

Neff defined variable (1) as work gratification, variable (2) as work needs, and variable (3) as Focus. In designing this model he considered variable (1) and (3) as bi-polar. Under variable (2) Neff identified five need areas: material, activity, self-esteem, esteem of others, and creativity. For increased clarity of presentation, the design is presented in Table I, and graphically illustrated in Figure I and Figure II.

TABLE I

BALANCED BLOCK DESIGN FOR ITEM CONSTRUCTION OF THE WORK ATTITUDE SCALE

Variables	Levels
A. Gratification:	(a) Satisfaction (b) Dissatisfaction
B. Needs:	(c) Material (d) Activity (e) Self-esteem (f) Esteem by others (g) Creativity
C. Focus:	(h) On self (i) On others

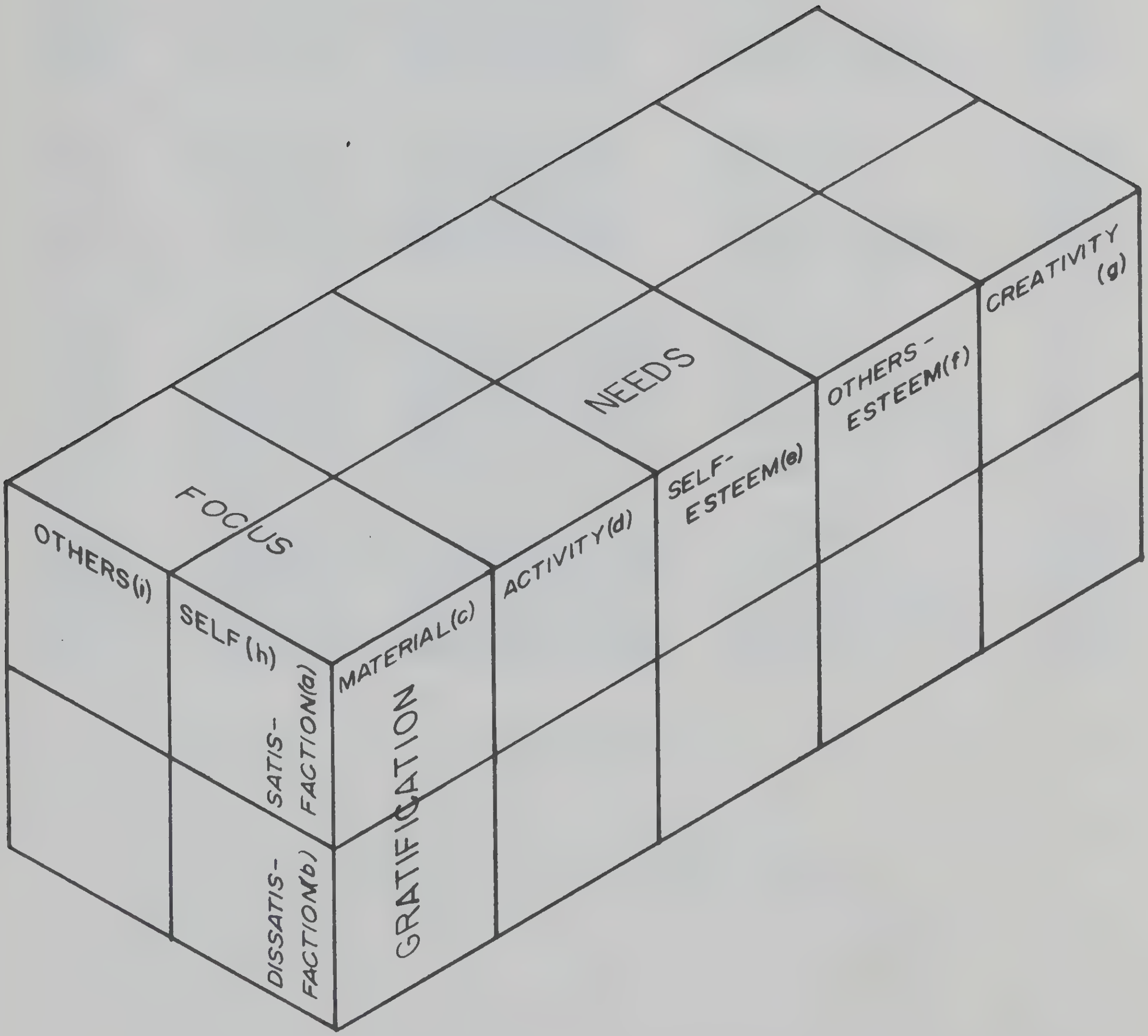

FIGURE 1

THE ABILITY TO WORK MODEL

Cell	Card	Gratification	Needs	Focus
ach	13-24-30	satisfaction	material	self
adh	8- 9-26	satisfaction	activity	self
aeh	21-33-40	satisfaction	self-esteem	self
afh	6-46-52	satisfaction	others-esteem	self
agh	10-29-57	satisfaction	creativity	self
aci	15-55-56	satisfaction	material	others
adi	14-38-54	satisfaction	activity	others
aei	1-44-50	satisfaction	self-esteem	others
afi	5-32-45	satisfaction	others-esteem	others
agi	4- 7-49	satisfaction	creativity	others
bch	20-43-53	dissatisfaction	material	self
bdh	25-31-37	dissatisfaction	activity	self
beh	11-16-39	dissatisfaction	self-esteem	self
bfh	19-28-59	dissatisfaction	others-esteem	self
bgh	42-47-58	dissatisfaction	creativity	self
bci	3-22-51	dissatisfaction	material	others
bdi	27-35-60	dissatisfaction	activity	others
bei	12-17-18	dissatisfaction	self-esteem	others
bfi	2-41-48	dissatisfaction	others-esteem	others
bgi	23-34-36	dissatisfaction	creativity	others

FIGURE II

DESCRIPTION OF MODEL CELLS

Neff developed 60 Q-sort statements about work which incorporated three main variables and their interactions. Some example statements were:*

Cell ach - The most important thing about working is the pay.

Cell afi - You cannot expect people to support you all your life; you have to do something for them too.

Cell bdh - Working keeps you tied down.

Cell bgi - Working just means carrying out someone else's ideas.

Each statement encompassed three dimensions. Three like-statements were divised for each of the twenty cells in the model. In effect this provided for twenty theoretical factors with three synonomous elements per factor.

In order to determine some measure of construct validity and internal consistency the instrument was administered by Neff to a group of professionally trained vocational counselors. They were instructed to sort the items and distribute them "as they would expect the average well-adjusted male industrial worker would sort them under instructions to describe himself." (Neff, 1963, p. 142.)

Analysis of variance was performed on the vocational counselors' sorts. Factor I indicated a high degree of agreement among the counselors. The replication variance of the weighted counselor's arrays were "satisfactorily low." (Neff, 1963, p. 143.)

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*For complete list see Appendix A.

The instrument was then administered to a series of 16 persons who had completed a three-week period of training and evaluation concerning their potential for work. The 16 subjects were then divided into two classes: successful and unsuccessful, on the basis of their evaluation. Neff found that the Q-sort scale discriminated between and within these two groups.

In summary, Neff developed a model based on work theories of other authors as well as his own experience with handicapped persons. He tested this model by empirical means and was satisfied that the instrument contained some measure of "construct validity" and "internal consistency."

VI. ATTITUDE MEASURING TECHNIQUES

The importance of human attitude research may best be indicated by Remmers (1951, p. 15), who stated,

> The realization is rapidly growing that attitudes, the way individuals and groups feel about the various aspects of their world are probably more determinative of behavior than mere cognitive understanding of this world. When this is granted the importance and value of attitude measurement becomes at once obvious.

This can be emphasized further by quoting Shaw and Wright (1967, p. 14):

> No theory of social behavior can be complete without incorporation of attitude functioning and it is doubtful that complex social behavior can be predicted without a knowledge of attitudes. To study attitudes requires that they be measured.

This realization has brought about the development of many attitude measuring scales, especially in the field of

educational and social psychology. A substantial number of these scales were compiled by Shaw and Wright (1967).

The measurement of attitudes (attitude measuring scales) are subject to many variables and abstract theories. The researcher using these scales must always be conscious of their validity, reliability, and/or limitations. Nottingham (1970, p. 247) stated that:

> In curriculum research there are numerous methods and instruments available--the "affective domain" of attitudes and values however has been beset by the recurrent problem of finding viable techniques of assessment.

Miller, in his paper entitled "A Crucial Problem in Attitude Research," discussed the relationships between verbal (written) indicators of an attitude and behaviour. His data revealed that the verbal indicators of attitude did not correlate positively with the subsequent behaviour. This may indicate that the individual's verbal (written) indicator of attitude as interpreted by the measuring device did not core-relate positively with his attitude. As Miller (1967, p. 240) indicated:

> The major issue involves the willingness of attitude researchers to experiment with a wide variety of measurement techniques so that methods which will yield higher relationships between verbal (written) responses and other classes of attitudinal behavior may be discovered . . . . It is safe to say, however, that the social and theoretical significance of attitude research is directly linked to the development of such methods.

VII. THE "Q" TECHNIQUE AS A MEASURING INSTRUMENT

Stephenson (1953) has spent a great deal of work on

the development of the "Q" technique. In his book Stephenson suggested many applications for the "Q" technique (Q-sort) as a measuring instrument, i.e. investigation of self-concept, psychoanalytic theory, and in the field of social psychology. Livson and Nichols (1955, p. 159) indicated that "the Q-sorting instrument . . . provides an efficient method of securing a large number of ratings which can be compared from person to person. . . ." As for the instruments applicability to personality (attitude) research, Livson and Nichols went on to say:

> The fact that so essentially simple a technique as the Q-sort should possess such a particular congeniality with so broad a range of personality problems may perhaps be attributed to its ability to speak both the language of the clinician's highly idiosyncrative case description and the researcher's quantified generalizations. It facilitates communication between these two "attitudes"; a condition crucial to effective research in the area of personality. (Livson and Nichols, p. 159.)

More recently researchers have adapted this measuring technique to education. As Sheldon and Sorenson (1960, p. 143) suggested, "Q-technique would appear to offer education a means of dealing more systematically with some of their evaluation problems." Other studies (Livson and Nichols, 1955; Block, 1956) compared "forced" and "unforced" Q-sorting procedures. After comparing the advantages and disadvantages of both, it was concluded that the "forced distribution method" may have a slight edge over the "unforced distribution."

Sheldon and Sorenson (1960) indicated that it was highly

feasible to use Q-technique with groups of students. As to the feasibility of applying the Q-sort to grade level students, Sheldon and Sorenson (1960, p. 150) asked the question:

> At what educational level is Q-technique appropriate? As reported above it has been used successfully with highschool students. If sufficient care is taken to write clear directions and to use words of the appropriate level of difficulty, it seems reasonable to believe that Q-sorts can be developed for use at the seventh grade level.

VIII. SUMMARY

During the 20th century there have been many valuable research contributions dealing with the work development of adolescents and with the factors which condition and are conditioned by this development. While the literature on preadolescent work does not seem to boast of any comprehensive explanation of work development, it does seem to claim a number of theoretical issues, i.e. opposing explanations for particular work phenomena.

It is becoming increasingly recognized that work is not a natural activity. Human beings must learn to become workers and it appears that details of the learning process vary greatly from individual to individual.

Second, it is recognized that the reaching of occupational maturity is a long, continuing process of development and not an isolated event. The literature examined revealed that the work personality probably has its roots well back in early childhood with the learning of general attitudes,

learning of sex and work roles, and the formation of value patterns. The process is continued into adolescence where there does come a time when many children begin to shape their plans toward some more-or-less specifically conceived occupational goal, but the reaching of this stage of choice does not necessarily mark any sharp cutoff between fantasy and realism.

While contradictions were apparent among some writers as to the time work concepts in children appeared, most accepted that many attitudes toward work formed during the early school years and their development was well established by the eighth grade.

In connection with attitude measurement the available literature indicated concern expressed by some researchers about the validity and reliability of some of the attitude measuring scales. The Q-technique (Q-sort) gained widespread acceptance as a method of attitude measurement especially in the field of psychology. Research also indicated that the Q-sort was successfully used with grade twelve students and implied that this technique could probably be used with equal success as low as the seventh grade.

CHAPTER III

INSTRUMENTATION AND METHODOLOGY

I. INTRODUCTION

This study was conducted to isolate specific factors related to the meaning of work held by public school students enrolled in the junior and senior high schools in Edmonton (grades eight to twelve inclusive). Further, by analyzing factors across grade levels, a trend or change in attitudes toward work might be noted. This study used a Q-sort instrument relating to statements about work developed by Neff, (1963, pp. 139-44).

II. DESCRIPTION OF SAMPLE AND POPULATION

Permission was granted by the Edmonton Public School Board at Edmonton in the Province of Alberta, to use students as subjects.

The sample included all male students attending two schools, one a junior high school and one a senior high school. The two schools selected were Hardisty Junior High and the Harry Ainlay Composite High School. The selection

of these two particular schools was a convenience insofar as it was possible for the researcher to administer the instrument personally to the high school student sample. Dr. George R. Rose, who was familiar with the instrument, had previously collected data from grade eight and nine students who attended Hardisty Junior High School and made the data available to the researcher.

Subjects were categorized as follows: Group I and II were those students enrolled in the grades eight and nine industrial arts programs respectively at Hardisty Junior High School. Groups III, IV, and V comprised all those male students attending grades ten (English 10 and 13), eleven (English 20 and 23), and grade twelve (English 30 and 33) during the second semester at the Harry Ainlay Composite High School.

This study included only male students in the population in order to minimize cultural bias. The industrial arts program was chosen for Groups I and II because this program included only the male students attending Hardisty Junior High School. The subjects which comprised Groups III, IV, and V were selected on the basis that, in spite of the varied programs available at the Harry Ainlay Composite High School, all students were required to take English. The selection of the English program helped to ensure a random sampling of the student population.

III. INSTRUMENTATION

The subjects used in the study consisted of five classes each of Grade VIII and Grade IX (Industrial Arts); eight classes of Grade X (English 10 and 13); nine classes of Grade XI (English 20 and 23); and nine classes of Grade XII (English 30 and 33).

Each student subject who desired to participate in the study received a set of sort cards, a record sheet, and a detailed instruction sheet. The students were asked to read the instructions and to complete the sort as directed by the instruction sheet. In order to help obtain frank responses the students were asked not to put their names on the record sheet and to indicate only their age in years and their sex.

Each respondent was then requested to sort sixty items into nine piles (numbered from 1 to 9) with step one being the "most characteristic" of the way he felt about work and step nine the "least characteristic" way he felt about work. Since regular class time was utilized for the collection of the data for this study, those students who did not desire to participate could not be given permission to leave the class. These students, as well as the ones who completed the sort early, were requested to sit quietly so as not to disturb the ones who were in the process of completing the Q-sort. The average time required by the majority of subjects to complete the Q-sort was approximately 45 minutes.

It was noted that a number of record sheets were not

completed correctly: eight from Group I, fourteen from Group II, eight from Group III, fourteen from Group IV, and twenty-three from Group V. In four instances students declined to follow instructions in order to amplify their opinion. Two record sheets were not completed on the grounds that the information requested could be utilized by the "establishment" for "devious" purposes.

The summary table of all respondents has been tabulated in Table II.

TABLE II

SUMMARY OF RESPONSES FROM JUNIOR AND SENIOR HIGH SCHOOL STUDENTS IN THE SAMPLE

GROUP	I	II	III	IV	V
GRADE	VIII	IX	X	XI	XII
SAMPLE SIZE N	91	82	83	92	103
TOTAL RESPONDENTS	99	96	91	106	126

IV. STATISTICAL PROCEDURES

The statistical procedures involved in this research utilized the computer services of the University of Alberta. A subject by item matrix (451 x 60) of raw scores was subjected to a program that calculated intercorrelations which were subjected to a principle components analysis. The axes were rotated to a varimax criterion.

In choosing to use the varimax rotation, the researcher was aware of a variety of distinct types of factor solutions. Some designs might tend to favor a particular solution or rotation i.e. orthogonal vs. oblique.

According to Harmon (1967, p. 107), "With the general availability of computers, a typical approach of many investigators is to obtain a principal factor solution for an observed correlation matrix and then transforming it to the varimax multiple factor solution."

Factor scores were derived for the extracted factors and group mean factor scores were then utilized in the testing of between group differences by analysis of variance. The Scheffe test was then used to determine significant differences between all possible combinations of means of factor pairs across the five groups.

CHAPTER IV

PRESENTATION OF FINDINGS

I. INTRODUCTION

During the last decade, a consensus of vocational and guidance writers have suggested that adolescent vocational aspirations are a product of interpersonal relationships with society. The objective of this study was to investigate the meaning of work, using Neff's model, as perceived by students who at the time of the study were enrolled in junior high and secondary school institutions in the City of Edmonton, Alberta.

This Chapter restates the hypothesis and describes the methods used to test the hypothesis. The critical level of significance for the study was set *a prioi* at .05.

II. MULTI-CORRELATIONAL ANALYSIS

In order to isolate specific factors relating to meanings of work held by students, and preceding the testing of the hypothesis posed by this research, it was necessary for the researcher to determine: (1) The manner in which high school students discriminated the theoretical model

and, (2) The extent to which the empirical factors perceived by the sample were congruent with the theoretical model.

If the three hypothesized factors of (1) satisfaction-dissatisfaction continuum, (2) need continuum, and (3) self-other continuum could be shown to be like the empirical factors, the investigator would be able to conclude that the instrument showed a sufficient degree of congruency with Neff's model to warrant its application to the testing of Hypothesis I.

The set of 60 statements about work was applied to every subject in the sample and the sort results of all subjects were analyzed in order to determine any commonalities in the sorting behaviour of the entire sample. Intercorrelations of item scoring arrays were derived for all the subjects in the total sample. The resulting correlation matrix was then factor analyzed to yield the unrotated principal component matrix. According to Neff's model, a possibility of 20 factors existed, therefore, 20 factors were extracted in the initial analysis. A total of 18 factors exhibited eigen values greater than one and therefore all subsequent computations were restricted to 18 factors. The orthogonal rotation used was a varimax transformation matrix.

Following Nunnally's estimate, a cutting score of ±.400 (Nunnally, 1967) was established to distinguish the significance of each item score within the factor. Factors beyond the first ten tended to become indistinguishable because it was not possible to see how they related to the theoretical

model and they were, therefore discarded. The ten retained factors accounted for 42 percent of the total variance. For increased clarity of presentation the factor items by number and cell location were listed below.

The relationship of the items which correlated significantly to the theoretical model indicated the discriminating power of the instrument. The findings showed a perfect discrimination on the satisfaction-dissatisfaction continuum. A somewhat less distinct division of the "need" continuum was found. The self-other continuum tended to be even less defined.

Factor I

No.	Item Content	Cell	Loading
29	Work gives me a chance to develop new ideas.	agh	-.678
10	I find work satisfying because it makes me feel creative.	agh	-.663
7	Work is exciting because of the new ideas people have.	agi	-.629
49	I find when I am working I get all sorts of new ideas from the people I work with.	agi	-.592
57	If I did not work, I would feel I am creating nothing.	agh	-.556
4	I have to be working in order to get new ideas from people.	agi	-.456

Factor II

No.	Item Content	Cell	Loading
44	People do not think much of you unless you can hold a job.	aei	-.661
46	If you are not able to work, people really do not treat you as an equal.	afh	-.627
6	People respect you more if you have a job.	afh	-.570

Factor III

No.	Item Content	Cell	Loading
17	Working just puts you in contact with people who give you a hard time.	bei	+.615
59	You cannot trust people you have to work with.	bfh	+.612
27	When you work, you have to spend time with a lot of boring people.	bdi	+.553
12	What I dislike about working is the people you meet.	bei	+.538
28	The trouble with working is that you are exposed to people who care nothing about you.	bfh	+.406

Factor IV

No.	Item Content	Cell	Loading
53	If I could make a living without working, I would grab the chance.	bch	+.770
43	The really lucky people are those who can live without working.	bch	+.755
16	I would not work unless I really had to.	beh	+.666
20	If somebody gave you the same amount of money as you could make, there would be no point in working.	bch	+.614

Factor V

No.	Item Content	Cell	Loading
39	Working just makes me feel like a cog in a machine.	beh	+.672
3	The trouble with working is that it is mostly for the benefit of other people.	bci	-.511
41	Work just means you are pleasing other people.	bfi	-.424

Factor VI

No.	Item Content	Cell	Loading
9	Life can get very boring, without something to occupy oneself.	adh	+.712
8	When you are not working, the time passes very slowly.	adh	+.692
38	When you are not working, you get lonely.	adi	+.488

Factor VII

No.	Item Content	Cell	Loading
42	If you have to work, you just have to give up thinking.	bgh	+.736
23	When you work, they make you give up your own ideas.	bgi	+.558
47	Working just dulls the imagination.	bgh	+.419

Factor VIII

No.	Item Content	Cell	Loading
30	If you do not work, there may be no money to take care of you when you are old.	ach	-.647
14	The people you work with make the time pass faster.	adi	+.542

Factor IX

No.	Item Content	Cell	Loading
60	The trouble with working is that it keeps me from doing things with the people I like.	bdi	+.621
37	The trouble with working is that I cannot do the things I really want to do.	bdh	+.582
31	Working keeps you tied down.	bdh	+.402

Factor X

No.	Item Content	Cell	Loading
50	What I like about working is the people you meet.	aei	-.791
52	The important thing about working is the friends you can make on the job.	afh	-.789
54	The big thing about working is that it gets you involved with other people.	adi	-.664

Testing of the Hypothesis

This hypothesis stated factor scores between the grade level groups would not be significantly different from zero (.05 level of confidence).

Statistical procedures employed were a one-way analysis of variance using an F test which was applied to the factor means of the five groups. Mean factor scores computed for the groups, by factor, were based on a total sample mean arbitrarily fixed at 50 with a standard deviation of 10. In all, ten separate one-way analyses of variance were computed. Where significant differences did appear, the Scheffe test was used to determine which groups differed significantly. The mean factor score and standard deviation for each group by factor are shown in Table III.

Analysis of Variance of Sub-hypothesis I

This analysis compared the factor means of the five groups of students on Factor I. Table IX in the appendix shows the complete analysis. Table IV shows a summary of means for the five groups.

TABLE III

SUMMARY OF MEAN FACTOR SCORES AND STANDARD DEVIATIONS FOR EACH GROUP BY FACTOR

	Factors									
Group	1	2	3	4	5	6	7	8	9	10
1 Mean	52.9	50.7	47.6	50.2	51.2	48.4	50.2	54.0	51.0	48.5
S.D.	9.2	10.9	10.7	8.2	9.9	9.0	8.8	10.5	9.2	10.5
2 Mean	48.6	50.1	50.4	48.2	50.2	49.9	50.1	49.3	51.3	49.6
S.D.	9.9	10.2	10.2	9.7	10.9	9.4	9.4	9.5	10.3	9.7
3 Mean	48.2	50.3	50.5	50.4	49.9	49.5	49.2	52.0	50.9	50.2
S.D.	9.9	10.6	10.0	10.9	9.3	10.2	10.2	10.1	10.4	9.5
4 Mean	51.1	50.4	50.9	50.2	48.5	51.0	50.5	47.8	49.6	51.4
S.D.	9.8	9.8	9.3	10.8	10.0	10.5	9.9	8.6	8.6	8.9
5 Mean	49.1	48.8	50.6	50.8	50.2	51.0	50.0	47.4	46.8	50.3
	10.6	8.7	9.7	10.2	9.9	10.7	11.4	9.7	10.5	11.2

TABLE IV

SUMMARY OF GROUP FACTOR MEAN SCORES
BETWEEN GROUP I, GROUP II, GROUP III,
GROUP IV AND GROUP V ON FACTOR I

GROUP	I	II	III	IV	V
MEAN	52.2	48.6	48.2	51.1	49.1

The results (F = 3.49; 4/446; P≥.008) showed that a significant difference did exist between groups; therefore, the null hypothesis was rejected. The Scheffe test indicated that a significant difference existed between the means of Group I and Group III. This factor as defined by Neff's model related to the concept of creativity.

Analysis of Variance of Sub-hypothesis II

This analysis compared the factor means of the five groups of students on Factor II. Table XX in the appendix shows the complete analysis. Table V shows a summary of means for the five groups.

TABLE V

SUMMARY OF GROUP FACTOR MEAN SCORES
BETWEEN GROUP I, GROUP II, GROUP III,
GROUP IV AND GROUP V ON FACTOR II

GROUP	I	II	III	IV	V
MEAN	50.7	50.1	50.3	50.4	48.8

The results (F = .54; 4/446; P≥.716) showed that a

significant difference did not exist between groups; therefore, the null hypothesis was not rejected. This factor as defined by Neff's model related most closely to self-esteem.

Analysis of Variance of Sub-hypothesis III

This analysis compared the factor means of the five groups of students on Factor II. Table XXI in the appendix shows the complete analysis. Table VI shows a summary of means for the five groups.

TABLE VI

SUMMARY OF GROUP FACTOR MEAN SCORES
BETWEEN GROUP I, GROUP II, GROUP III,
GROUP IV AND GROUP V ON FACTOR III

GROUP	I	II	III	IV	V
MEAN	47.6	50.4	50.5	50.9	50.6

The results (F = 1.73; 4/446; P .723) showed that a significant difference did not exist between groups; therefore, the null hypothesis was not rejected. This factor as defined by Neff's model related most closely to esteem.

Analysis of Variance of Sub-hypothesis IV

This analysis compared the factor means of the five groups of students on Factor IV. Table XXII in the appendix shows the complete analysis. Table VII shows a summary of means for the five groups.

TABLE VII

SUMMARY OF GROUP FACTOR MEAN SCORES BETWEEN GROUP I, GROUP II, GROUP III, GROUP IV AND GROUP V ON FACTOR IV

GROUP	I	II	III	IV	V
MEAN	50.2	48.2	50.4	50.2	50.8

The results (F = .92; 4/446; P≥.453) showed that a significant difference did not exist between groups; therefore, the null hypothesis was not rejected. This factor as defined by Neff's model related to material needs.

Analysis of Variance of Sub-hypothesis V

This analysis compared the factor means of the five groups of students on Factor V. Table XXIII in the appendix shows the complete analysis. Table VIII shows a summary of means for the five groups.

TABLE VIII

SUMMARY OF GROUP FACTOR MEAN SCORES BETWEEN GROUP I, GROUP II, GROUP III, GROUP IV AND GROUP V ON FACTOR V

GROUP	I	II	III	IV	V
MEAN	51.2	50.2	49.9	48.5	50.2

The results (F = .89; 4/446; P ≥ .467) showed that a significant difference did not exist between groups; therefore, the null hypothesis was not rejected. This factor could not be related to Neff's model.

Analysis of Variance of Sub-hypothesis VI

This analysis compared the factor means of the five groups of students on Factor VI. Table XXIV in the appendix shows the complete analysis. Table IX shows a summary of means for the five groups.

TABLE IX

SUMMARY OF GROUP FACTOR MEAN SCORES
BETWEEN GROUP I, GROUP II, GROUP III,
GROUP IV AND GROUP V ON FACTOR IV

GROUP	I	II	III	IV	V
MEAN	48.4	49.9	49.5	50.5	50.0

The results (F = 1.45; 4/446; P≥.334) showed that a significant difference did not exist between groups; therefore, the null hypothesis was not rejected. This factor as defined by Neff's model related to "activity concepts."

Analysis of Variance of Sub-hypothesis VII

This analysis compared the factor means of the five groups of students on Factor VII. Table XXV in the appendix shows the complete analysis. Table X shows a summary of means for the five groups.

TABLE X

SUMMARY OF GROUP FACTOR MEAN SCORES
BETWEEN GROUP I, GROUP II, GROUP III,
GROUP IV AND GROUP V ON FACTOR VII

GROUP	I	II	III	IV	V
MEAN	50.2	50.1	49.2	50.5	50.0

The results (F = 0.17; 4/446; P≥.952) showed that a significant difference did not exist between groups; therefore, the null hypothesis was not rejected. This factor as defined by Neff's model related to creativity.

Analysis of Variance of Sub-hypothesis VIII

This analysis compared the factor means of the five groups of students on Factor VIII. Table XXVI in the appendix shows the complete analysis. Table XI shows a summary of means for the five groups.

TABLE XI

SUMMARY OF GROUP FACTOR MEAN SCORES
BETWEEN GROUP I, GROUP II, GROUP III,
GROUP IV AND GROUP V ON FACTOR VIII

GROUP	I	II	III	IV	V
MEAN	54.0	49.3	52.0	47.8	47.4

The results (F = 7.80; 4/446; P≥.00001) showed that a significant difference did exist between groups; therefore, the null hypothesis was rejected. The Scheffe test as tabulated in Table XII indicated that sifnificant differences existed between the means of groups I and II, I and IV, I and V, and II and V. This factor could not be related to Neff's model.

TABLE XII

SUMMARY OF THE SCHEFFE PROBABILITY MATRIX FOR THE MULTIPLE COMPARISON OF GROUP MEANS OF FACTOR VIII

GROUP	I	II	III	IV	V
I	1.00	.04*	.75	.001*	.0002*
II		1.00	.535	.908	.799
III			1.00	.093	.042*
IV				1.00	.999
V					1.00

*Significant at .05 level.

Analysis of Variance of Sub-hypothesis IX

This analysis compared the factor means of the five groups of students on Factor IX. Table XXVI in the appendix shows the complete analysis. Table XIII shows a summary of means for the five groups.

TABLE XIII

SUMMARY OF THE FACTOR MEAN SCORES BETWEEN GROUP I, GROUP II, GROUP III, GROUP IV AND GROUP V ON FACTOR IX

GROUP	I	II	III	IV	V
MEAN	52.1	51.3	50.9	49.6	46.8

The results (F = 4.22; 4/446; P .002) showed that a significant difference did exist between groups; therefore, the null hypothesis was rejected. The Scheffe test tabulated in Table XIV indicated that significant differences existed between the means of groups I and IV and groups I and V. This factor as defined by Neff's model related to the concept of activity.

TABLE XIV

SUMMARY OF THE SCHEFFE PROBABILITY
MATRIX FOR THE MULTIPLE COMPARISON
OF GROUP MEANS OF FACTOR IX

GROUP	I	II	III	IV	V
I	1.00	.99	.96	.57	.01*
II		1.00	.99	.85	.05*
III			1.00	.94	.10
IV				1.00	.44
V					1.00

Analysis of Variance of Sub-hypothesis X

This analysis compared the factor means of the five groups of students on Factor X. Table XXVIII in the appendix shows the complete analysis. Table XV shows a summary of means for the five groups.

TABLE XV

SUMMARY OF GROUP FACTOR MEAN SCORES
BETWEEN GROUP I, GROUP II, GROUP III,
GROUP IV AND GROUP V ON FACTOR X

GROUP	I	II	III	IV	V
MEAN	48.5	49.6	50.2	51.4	50.3

The results (F = .96; 4/446; P≥.431) showed that a significant difference did not exist between groups; the null hypothesis was not rejected. This factor could not be clearly related to Neff's model.

The distribution of the sample factors were summarized as shown in Table XVI. The findings implied some measure of factoral identity to the original model. The naming of each factor corresponded to the subjective method employed by Neff and was for the most part acceptable to the researcher. The procedure analyzed all items which comprised the factor and then chose the adjective most descriptive of the common theme which existed among the statements. Factors V, VIII, and X could not be named using this procedure.

III. SUMMARY

The theoretical design of the model (Figure II) permitted the extraction of up to 20 different factors. The computer calculation indicated that, for the entire sample of 451 subjects, 18 factors had eigen values greater than

TABLE XVI

DISTRIBUTION OF SAMPLE FACTORS

Factor Number	Need	Focus	Gratification	Group Differences
I	Creativity	Self-others	Satisfaction	1-3
II	Esteem	Self	Satisfaction	
III	Esteem	Self-others	Dissatisfaction	
IV	Material	Self	Dissatisfaction	
V				
VI	Activity	Self	Satisfaction	
VII	Creativity	Self	Dissatisfaction	
VIII				1-2, 1-4, 1-5, 3-5
IX	Activity	Self	Dissatisfaction	1-5, 2-5
X				

one. It became evident that several of the meanings implied in the initial factoral design were either not discriminated by the subjects or were merged with other meanings because factors beyond the first ten were not clearly distinguishable. Therefore, only the first ten factors were considered in the study.

The results of the testing indicated that: the three hypothesized factors of (1) satisfaction-dissatisfaction continuum, (2) need continuum, and (3) self-other continuum were sufficiently congruent with the empirical data to permit its use in the testing of the hypothesis. The results of the testing of the hypothesis showed that significant differences existed between groups on Factor I, Factor VIII, and Factor IX. The remaining seven factors were not found to be significantly different across grade levels.

CHAPTER V

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

I. SUMMARY OF THE STUDY

This study elicited, using a list of Q-sort items relating to statements about work, data not previously encountered in studies of work attitudes in adolescents. Knowledge of this kind would be valuable to vocational school teachers as an aid in helping adolescents understand the occupational meaning of their personal interests.

Methodology and Data

Ninety-nine male Grade VIII students, 96 Grade IX students, 91 Grade X students, 106 Grade XI students and 126 Grade XII students attending public schools in Edmonton were asked to sort 60 cards containing statements about work.

Intercorrelations of item scoring arrays were derived for all the subjects in the sample. The resulting correlation matrix was then factor analyzed to yield the unrotated principal component matrix. A varimax transformation matrix was then derived of which 10 factors (as defined by Neff's model) were recognized as being congruent.

In order to investigate group differences, mean factor scores were obtained for each group on ten factors. Differences between means were tested for significance using a one-way analysis of variance and the Scheffe test.

II. CONCLUSIONS

Before it was possible to proceed with the testing of the Hypothesis posed by this study, it was first necessary to determine if:

> The three hypothesized factors of (1) satisfaction-dissatisfaction continuum, (2) need continuum and, (3) self-other continuum will be congruent with empirical factors.

The findings of the factor analysis performed on the data demonstrated the discriminating power of the instrument. The results indicated a perfect discrimination on the satisfaction-dissatisfaction continuum. Discrimination of the need continuum proved adequate. The self-other continuum tended to be less defined.

The analysis of the items contained within the factors showed the degree to which they corresponded to the cells of the model. On this basis, the investigator concluded that the model had demonstrated congruency with the empirical data warranting its use in the testing of the Hypothesis. The Hypothesis stated:

> Differences between the group factors will not be significantly different from zero. (.05 level of confidence.)

This hypothesis was not rejected.

III. DISCUSSION

Some evidence relative to the ability of the model to discriminate work attitudes in adolescents was obtained from the factors which were derived from the analysis.

Factor I

The items which comprised this factor were derived from two individual cells in the theoretical model. Both were concerned with creativity on the "satisfaction" continuum. However, the subjects were unable to discriminate between creativity focussed on self and creativity focussed on others.

Factor II

Two of the items contained in this factor were identified by the model to be focused on self and concerned with others-esteem. The third item differed in that the focus was on others and the concern was self-esteem. All three items were displayed on the "satisfaction" continuum. A close scrutiny of the item content indicated that the wording of the item statement provided a subtle difference in meaning.

Factor III

This factor appeared to be formed from the merging of meaning of two cells each containing equal items. It is interesting to note that the factor did not discriminate between self-other on one continuum and between self-esteem

and other-esteem on the second continuum.

Factor IV

This factor identified three items belonging to the cell focussed on self and associated with material needs. A fourth item clustered within this factor proved to be indistinguishable in meaning.

Factor V

It was not possible to fit this factor to the original model because it contained three statements that originated from three unrelated cells in the model.

Factor VI

Statements comprising this factor were associated with activity. Two statements focussed on "self" while the remaining statement focussed on "others."

Factor VII

The three statements in this factor related to the creativity concept. All three statements aligned on the dissatisfaction continuum. One of the statements focussed on others while the other two statements focussed on "self" of the "self-other" continuum.

Factor VIII

The two statements comprising this factor could not be related to the model.

Factor IX

The three statements relating to this factor are concerned with the need for activity. One of the statements focussed on "others" while the other two statements focussed on "self" of the self-other continuum.

Factor X

Although the three statements relating to this factor cannot be attached to any one particular cell in the model, the three statements in this factor bear considerable resemblance in meaning.

The findings of Hypothesis I disclosed that it could be partly rejected. While the data is not able to support the whole of this hypothesis, it does appear in some instances to be operating in the direction predicted.

An important finding of the testing of Hypothesis I appeared to be that the Grade VIII student group and the Grade X student group differed in their perceptions held about work with regard to the "creativity" concepts. It appears that the remaining grade levels were responding in a like way to certain commonalities within the data on this factor. That this has occurred leaves the researcher to conclude that on the basis of the correlation analysis, the sort technique does differentiate between grade levels.

The findings relating to Hypothesis I_h indicate that even though differences between grade scores were significant, the researcher felt that it was impossible to form

an opinion because the factor's relationship to the original model was not clear.

Another finding of this research related to the :activity: dimension in sub-hypothesis IX. This hypothesis appeared to demonstrate that differences between groups was an accumulative phenomenon spanning several years of education.

The hypothesis showed significant differences of perception existed between Grades VIII and XII students, and Grades IX and XII students. Furthermore, differences between all other groups operated in the direction of a diminishing score on the activity factor. This led the researcher to believe that the need to direct one's own activity diminishes toward the Grade XII year.

The findings of this research supported the hypothesis that adolescents enrolled in Junior and Senior high schools would be able to discriminate the continua of the ability to work model devised by Neff. Where student perceptions appeared to deviate from the cell design, visual observation verified the ambiguity of certain statements as they pertained to the individual statements contained within the cell. It appeared that the choice of certain words in these statements caused uncertainty as to which cell they pertained to, i.e. students found di-ficulty discriminating the self-other continuum to the degree that the researcher might question the existence of this continuum.

In summary, the findings indicated that the attitudes

toward work displayed by public school students were concerned with creativity, esteem, activity and material needs. Further, with the exception of isolated differences, the investigator was able to conclude that student attitudes in general appear not to change as they progress through the high school system.

IV. IMPLICATIONS

This study has a variety of implications for today's occupational world. Together, the school and industry have a duty to ensure that all potential and present workers achieve the maximum amount of satisfaction from their labor.

A recent arrival on the educational scene has been the concept of Career Education. This philosophy has proposed that from kindergarten on, students must be helped to perceive themselves as "productive workers." As such, a program of attitude formation has a vital need for instruments exhibiting the potential to distinguish presently held attitudes, and for measuring changes in the attitudes as they occur.

Likewise, present industrial workers are faced with an ever-changing occupational scene. Changing job requirements herald the era of job obsolescence for those workers who cannot adjust to new work skills or who cannot form new attitudes toward their work. The application of models, such as has been used in this research, bears evidence of the

challenge which still lies ahead in the study of work attitudes.

V. RECOMMENDATIONS

Further research might determine whether the model that has been used in this instance has any application to young children. If the technique did not prove useful in extending the body of knowledge downward to the kindergarten level, new instruments and methods could be developed to make it possible to compare attitudes of work held by the very young and those held by adolescents.

A second important area of desirable research concerns the ranking of attitudes. Ultimately it will prove desirable to know something about the strength of position of concepts in the hierarchial structure of work attitudes. This is perhaps the most important direction for future research effort to be expended.

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APPENDIX A

Q-SORT INSTRUMENT

60-Item Deck of Statements About Work

1. It makes me feel important when people think I'm doing a good job.
2. You're not worth much as a person if you don't work.
3. The trouble with working is that it's mostly for the benefit of other people.
4. I have to be working in order to get new ideas from people.
5. Working means that you help others and they help you.
6. People respect you more if you have a job.
7. Work is exciting because of the new ideas people have.
8. When you're not working, the time passes very slowly.
9. Life can get very boring, without something to occupy oneself.
10. I find work satisfying because it makes me feel creative.
11. Working just makes me feel like a cog in a machine.
12. What I dislike about working is the people you meet.
13. The important thing about working is the pay.
14. The people you work with make the time pass faster.
15. With the money you get from working, you can help support those dear to you.
16. I wouldn't work unless I really had to.
17. Working just puts you in contact with people who give you a hard time.
18. Working just makes me feel that I'm low man on the totem pole.
19. It's tough to have to depend on the opinion of people you work for.
20. If somebody gave you the same amount of money as you could make, there would be no point in working.

21. Having a job makes you feel you're worth something.

22. I work hard enough for my money, without having to support a bunch of other people.

23. When you work, they make you give up your own ideas.

24. Without the money you get from working, there wouldn't be much to make life worthwhile.

25. Work is boring.

26. The main thing about working is that it fills your day.

27. When you work, you have to spend time with a lot of boring people.

28. The trouble with working is that you're exposed to people who care nothing about you.

29. Work gives me a chance to develop new ideas.

30. If you don't work, there may be no money to take care of you when you're old.

31. Working keeps you tied down.

32. You can't expect people to support you all your life. You have to do something for them, too.

33. If you're not able to work, you can't really feel grown-up.

34. Working just means carrying out someone else's ideas.

35. Working doesn't give you enough time just to be by yourself.

36. To work means to be forced into a pattern dreamed up by other people.

37. The trouble with working is that I can't do the things I really want to do.

38. When you're not working, you get lonely.

39. Working is just something you have to do.

40. It's a bad feeling to be wholly dependent on others.

41. Work just means you're pleasing other people.

42. If you have to work, you just have to give up thinking.

43. The really lucky people are those who can live without working.

44. People don't think much of you unless you can hold a job.

45. Working means that you're pulling your weight along with others.

46. If you aren't able to work, people really do not treat you as an equal.

47. Working just dulls the imagination.

48. I don't see why you have to work in order to be considered part of the human race.

49. I find when I am working I get all sorts of new ideas from the people I work with.

50. What I like about working is the people you meet.

51. I'm not interested in working just because other people want me to.

52. The important thing about working is the friends you can make on the job.

53. If I could make a living without working, I'd grab the chance.

54. The big thing about working is that it gets you involved with other people.

55. If you have a job, you can raise a family.

56. The money you get from working enables you to do things for people.

57. If I didn't work, I would feel I am creating nothing.

58. Working means just doing the same things over and over again.

59. You can't trust people you have to work with.

60. The trouble with working is that it keeps me from doing things with the people I like.

Dear Student:

You know that different people have different ideas about work. I would like to know what you think about it --what it means to you. It would be of the greatest value if you would pick out those statements printed on cards, that best describe what you think. You can best express your opinion, in the easiest way, by arranging the cards and completing the Record Sheet according to the step-by-step procedure shown on the Instruction Sheet.

Do not put your name on the Record Sheet since this study is not intended to be used to make any individual evaluation of those of you who are participating. Please do not feel that you are being forced to complete this questionnaire. I only ask that if you choose not to do it, please remain silent so that those participating in this can do so without interruption. When you have completed sorting the cards, please complete the Record Sheet according to directions.

Your participation in a research study designed to find out the meaning work has for students is very much appreciated. May I express my sincere thanks for the time and consideration you give to this study. Now, please begin to read the Instruction Sheet.

Yours truly,

P. Woloshyn

INSTRUCTION SHEET

1. Enclosed are 60 cards.

2. The cards have items concerning statements which are representative of work.

3. Before you start to sort, READ all of the cards quickly. You will be sorting the cards in the order of the CHARACTERISTIC MEANINGS you give to work.

4. Sort the cards into three piles as follows:

MOST CHARACTERISTIC	CHARACTERISTIC	LEAST CHARACTERISTIC
11 cards	38 cards	11 cards

5. Now sort the MOST CHARACTERISTIC pile of cards into three piles as follows:

   No. 1 No. 2 No. 3

   Place the 2 cards evaluated as most characteristic in Pile No. 1.
   Place the 3 cards evaluated as next most characteristic in Pile No. 2.
   Place the 6 cards evaluated as next most characteristic in Pile No. 3.

6. In the upper right-hand corner of each card is a number. Write these numbers in the corresponding squares in Columns 1, 2, and 3 on the Record Sheet (Form C).

7. Now sort the CHARACTERISTIC pile of cards into three piles as follows:

   No. 4 No. 5 No. 6

   Place the 11 cards evaluated as most characteristic in Pile No. 4.
   Place the 16 cards evaluated as next most characteristic in Pile No. 5.
   Place the 11 cards evaluated as next most characteristic in Pile No. 6.

8. Record the numbers that are on the upper right-hand corners of these cards in the corresponding squares in Columns 4, 5, and 6 on the Record Sheet (Form C).

9. Now sort the LEAST CHARACTERISTIC pile of cards into three piles as follows:

   No. 7 No. 8 No. 9

   Place the 6 cards evaluated as most characteristic in Pile No. 7.
   Place the 3 cards evaluated as next most characteristic in Pile No. 8.
   Place the 2 cards evaluated as next most characteristic in Pile No. 9.

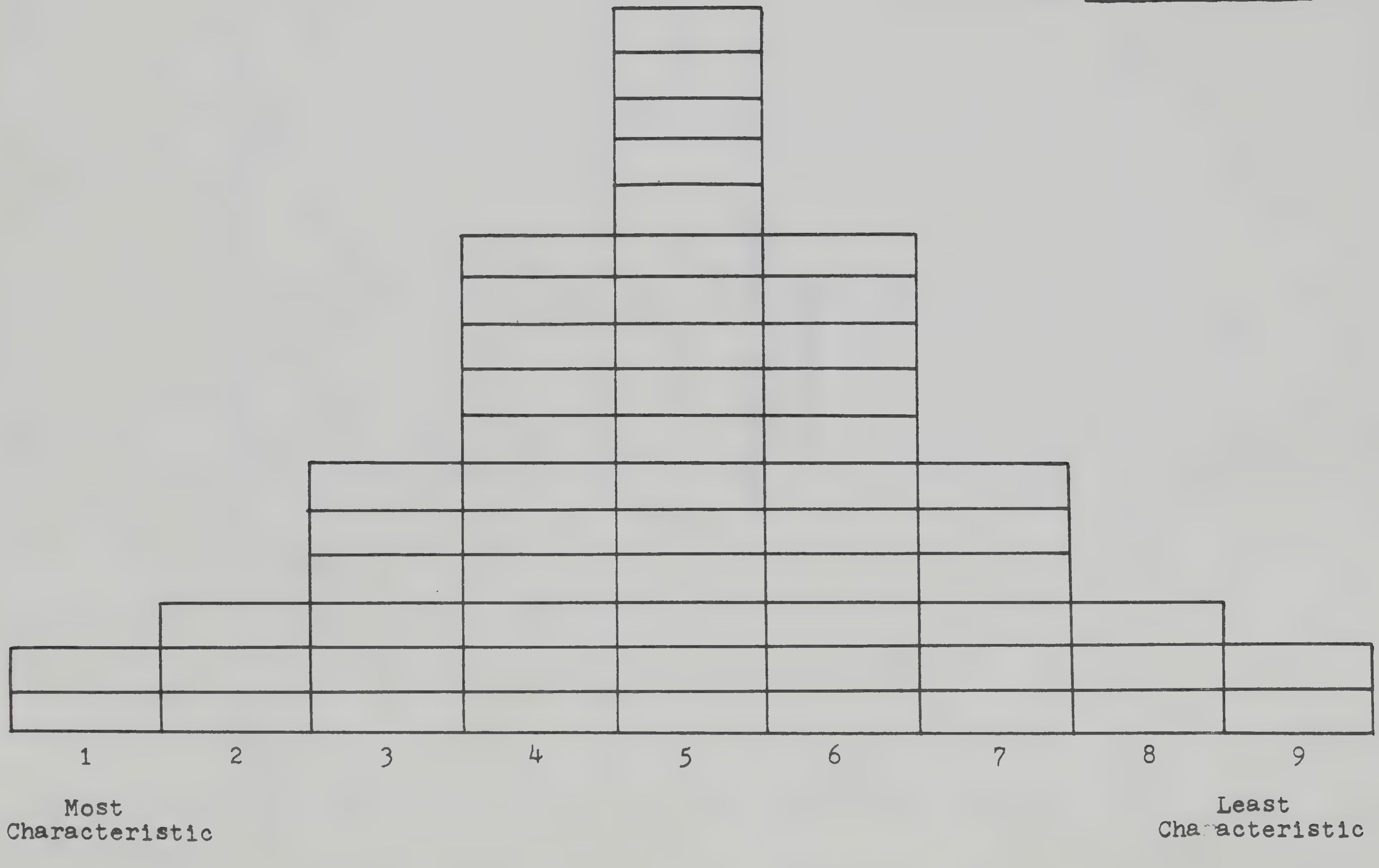
10. Record the numbers that are on the upper right-hand corners of these cards in the corresponding squares in Columns 7, 8, and 9 on the Record Sheet (Form C).

RECORD SHEET

GRADE ______________

AGE ________________

SEX ________________



APPENDIX B

ANALYSIS OF VARIANCE

TABLE XVII

SUMMARY OF EIGEN VALUES

1	2	3	4	5	6
7.84	3.04	2.47	2.27	1.87	1.75
7	8	9	10	11	12
1.71	1.50	1.43	1.40	1.36	1.31
13	14	15	16	17	18
1.27	1.20	1.18	1.12	1.07	1.05
19	20	21	22	23	24
0.99	0.98	0.95	0.91	0.90	0.88
25	26	27	28	29	30
0.86	0.84	0.82	0.79	0.76	0.75
31	32	33	34	35	36
0.73	0.71	0.70	0.69	0.68	0.63
37	38	39	40	41	42
0.62	0.60	0.57	0.57	0.56	0.55
43	44	45	46	47	48
0.55	0.51	0.51	0.50	0.48	0.46
49	50	51	52	53	54
0.43	0.42	0.41	0.40	0.37	0.36
55	56	57	58	59	60
0.34	0.33	0.31	0.31	0.26	0.00

TABLE XVIII

MEAN VECTOR SCORES FOR SIXTY ITEM-STATEMENTS

1	2	3	4	5	6
3.48	5.43	5.71	5.32	4.04	4.08
7	8	9	10	11	12
4.52	4.57	3.76	4.16	6.17	6.50
13	14	15	16	17	18
3.93	4.20	3.99	6.00	6.20	6.47
19	20	21	22	23	24
4.93	5.16	3.65	5.48	5.93	4.77
25	26	27	28	29	30
6.42	5.07	6.06	5.90	3.95	4.53
31	32	33	34	35	36
5.17	3.70	5.56	5.50	5.00	5.61
37	38	39	40	41	42
4.70	5.22	5.29	3.67	5.59	6.76
43	44	45	46	47	48
5.65	4.59	4.28	4.92	6.70	5.21
49	50	51	52	53	54
4.14	4.12	4.92	4.10	4.99	4.04
55	56	57	58	59	60
4.35	4.38	4.58	5.58	6.42	4.87

TABLE XIX

ANALYSIS OF VARIANCE OF MEAN FACTOR SCORES AND PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS FOR FACTOR I

GROUP	NUMBER	MEAN	VARIANCE	S. DEV.
1	91.	52.8536	85.5056	9.2469
2	82.	48.6031	97.1736	9.8577
3	83.	48.1729	96.9131	9.8951
4	92.	51.0754	96.1525	9.8057
5	103.	49.1016	111.6789	10.5678
TOTAL	451.	49.9997	100.0098	10.0005

Homogenity of Variance Test Chi^2 = 1.7215
Probability = 0.7868

ANALYSIS OF VARIANCE

SOURCE	SS	MS	DF	F	P
GROUPS	0.13680000E 04	342.00	4.	3.49	0.008067
ERROR	0.43736000E 05	98.06	446.		

PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS

	1	2	3	4	5
1	1.0000	0.0955	0.0474	0.8308	0.1413
2		1.0000	0.9993	0.6091	0.9984
3			1.0000	0.4421	0.9821
4				1.0000	0.7484
5					1.0000

TABLE XX

ANALYSIS OF VARIANCE OF MEAN FACTOR SCORES AND PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS FOR FACTOR II

GROUP	NUMBER	MEAN	VARIANCE	S. DEV.
1	91.	50.6689	119.3389	10.9242
2	82.	50.0665	103.9290	10.1946
3	83.	50.3070	111.8582	10.5763
4	92.	50.3553	96.1545	9.8058
5	103.	48.7897	76.6042	8.7524
TOTAL	451.	49.9996	100.0107	10.0005

Homogenity of Variance Test Chi^2 = 5.4451
Probability = 0.2446

ANALYSIS OF VARIANCE

SOURCE	SS	MS	DF	F	P
GROUPS	0.21200000E 03	53.00	4.	0.53	0.716261
ERROR	0.44894000E 05	100.66	446.		

PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS

	1	2	3	4	5
1	1.0000	0.9971	0.9996	0.9998	0.7915
2		1.0000	0.9999	0.9998	0.9462
3			1.0000	1.0000	0.9017
4				1.0000	0.8806
5					1.0000

TABLE XXI

ANALYSIS OF VARIANCE OF MEAN FACTOR SCORES AND PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS FOR FACTOR III

GROUP	NUMBER	MEAN	VARIANCE	S. DEV.
1	91.	47.5646	114.7104	10.7103
2	82.	50.4131	104.1605	10.2059
3	83.	50.4982	100.5114	10.0255
4	92.	50.9278	86.6312	9.3076
5	103.	50.5911	93.4154	9.6652
TOTAL	451.	49.9997	100.0071	10.0004

Homogenity of Variance Test Chi^2 = 2.0685
Probability = 0.7232

ANALYSIS OF VARIANCE

SOURCE	SS	MS	DF	F	P
GROUPS	0.68900000E 03	172.25	4.	1.73	0.142269
ERROR	0.44414000E 05	99.58	446.		

PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS

	1	2	3	4	5
1	1.0000	0.4766	0.4417	0.2695	0.3507
2		1.0000	1.0000	0.9984	1.0000
3			1.0000	0.9992	1.0000
4				1.0000	0.9996
5					1.0000

TABLE XXII

ANALYSIS OF VARIANCE OF MEAN FACTOR SCORES AND PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS FOR FACTOR IV

GROUP	NUMBER	MEAN	VARIANCE	S. DEV.
1	91.	50.1792	67.7097	8.2286
2	82.	48.1561	.0270	9.6968
3	83.	50.4320	119.4809	10.9307
4	92.	50.1736	116.8736	10.8108
5	103.	50.8056	103.8394	10.1902
TOTAL	451.	49.9998	100.0022	10.0001

Homogenity of Variance Test Chi^2 = 8.7617
Probability = 0.0673

ANALYSIS OF VARIANCE

SOURCE	SS	MS	DF	F	P
GROUPS	0.36800000E 03	92.00	4.	0.92	0.453607
ERROR	0.44734000E 05	100.30	446.		

PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS

	1	2	3	4	5
1	1.0000	0.7796	0.9999	1.0000	0.9958
2		1.0000	0.7118	0.7798	0.5264
3			1.000	0.9999	0.9995
4				1.0000	0.9956
5					1.0000

TABLE XXIV

ANALYSIS OF VARIANCE OF MEAN FACTOR SCORES AND PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS FOR FACTOR VI

GROUP	NUMBER	MEAN	VARIANCE	S. DEV
1	91.	48.4092	81.5958	9.0030
2	82.	49.8764	88.9684	9.4323
3	83.	49.4641	103.0381	10.1508
4	92.	51.0041	109.6504	10.4714
5	103.	51.0375	114.3903	10.6953
TOTAL	451.	49.9997	100.0083	10.0004

Homogenity of Variance Test Chi^2 = 3.6578
Probability = 0.4543

ANALYSIS OF VARIANCE

SOURCE	SS	MS	DF	F	P
GROUPS	0.45900000E 03	114.75	4.	1.15	0.334025
ERROR	0.44645000E 05	100.10	446.		

PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS

	1	2	3	4	5
1	1.0000	0.9204	0.9751	0.5455	0.5043
2		1.000	0.9994	0.9683	0.9613
3			1.0000	0.9044	0.8882
4				1.0000	1.0000
5					1.0000

TABLE XXV

ANALYSIS OF VARIANCE OF MEAN FACTOR SCORES AND PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS FOR FACTOR VII

GROUP	NUMBER	MEAN	VARIANCE	S. DEV.
1	91.	50.1547	78.0826	8.8364
2	82.	50.0972	88.8688	9.4270
3	83.	49.2342	104.9725	10.2456
4	92.	50.4541	97.1525	9.8566
5	103.	49.9964	130.9779	11.4446
TOTAL	451.	49.9998	100.0088	10.0004

Homogenity of Variance Test Chi^2 = 7.2373
Probability = 0.1239

ANALYSIS OF VARIANCE

SOURCE	SS	MS	DF	F	P
GROUPS	0.70000000E 02	17.50	4.	0.17	0.952026
ERROR	0.45034000E 05	100.97	446.		

PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS

	1	2	3	4	5
1	1.0000	1.0000	0.9852	0.9998	1.0000
2		1.0000	0.9895	0.9996	1.0000
3			1.0000	0.9580	0.9920
4				1.0000	0.9988
5					1.0000

TABLE XXVI

ANALYSIS OF VARIANCE OF MEAN FACTOR SCORES AND PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS FOR FACTOR VIII

GROUP	NUMBER	MEAN	VARIANCE	S. DEV.
1	91.	54.0003	111.1632	10.5434
2	82.	49.2790	91.0201	9.5404
3	83.	51.9617	102.5915	10.1287
4	92.	47.7928	73.7108	8.5855
5	103.	47.4290	94.7022	9.7315
TOTAL	451.	49.9997	100.0071	10.0004

Homogenity of Variance Test Chi^2 = 4.1660
Probability = 0.3840

ANALYSIS OF VARIANCE

SOURCE	SS	MS	DF	F	P
GROUPS	0.29480000E 04	737.00	4.	7.80	0.000010
ERROR	0.42156000E 05	94.52	446.		

PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS

	1	2	3	4	5
1	1.0000	0.0391	0.7525	0.0011	0.0002
2		1.0000	0.5352	0.9076	0.7991
3			1.0000	0.0927	0.0421
4				1.0000	0.9994
5					1.0000

TABLE XXVII

ANALYSIS OF VARIANCE OF MEAN FACTOR SCORES AND PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS FOR FACTOR IX

GROUP	NUMBER	MEAN	VARIANCE	S. DEV.
1	91.	52.0603	84.9736	9.2181
2	82.	51.2987	106.6767	10.3284
3	83.	50.8719	108.2835	10.4059
4	92.	49.5731	78.4622	8.8579
5	103.	46.8244	109.3321	10.4562
TOTAL	451.	49.9998	100.0029	10.0001

Homogenity of Variance Test Chi^2 = 4.2943
Probability = 0.3676

ANALYSIS OF VARIANCE

SOURCE	SS	MS	DF	F	P
GROUPS	0.16430000E 04	410.75	4.	4.22	0.002331
ERROR	0.43459000E 05	97.44	446.		

PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS

	1	2	3	4	5
1	1.0000	0.9924	0.9595	0.5744	0.0094
2		1.0000	0.9993	0.8569	0.0539
3			1.0000	0.9443	0.1042
4				1.0000	0.4393
5					1.0000

TABLE XXVIII

ANALYSIS OF VARIANCE OF MEAN FACTOR SCORES AND PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS FOR FACTOR X

GROUP	NUMBER	MEAN	VARIANCE	S. DEV.
1	91.	48.5421	109.8000	10.4785
2	82.	49.6201	93.3557	9.6621
3	83.	50.1513	89.7599	9.4742
4	92.	51.3587	79.2644	8.9031
5	103.	50.2533	124.5312	11.1594
TOTAL	451.	49.9996	100.0056	10.0003

Homogenity of Variance Test Chi^2 = 5.9482
Probability = 0.2030

ANALYSIS OF VARIANCE

SOURCE	SS	MS	DF	F	P
GROUPS	0.38400000E 03	96.00	4.	0.96	0.430587
ERROR	0.44719000E 05	100.27	446.		

PROBABILITY MATRIX FOR SCHEFFE MULTIPLE COMPARISON OF MEANS

	1	2	3	4	5
1	1.0000	0.9734	0.8907	0.4608	0.8421
2		1.0000	0.9984	0.8600	0.9961
3			1.0000	0.9590	1.0000
4				1.0000	0.9638
5					1.0000

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